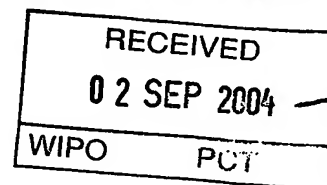


## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference 68.0327		<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US03/14993		International filing date (day/month/year) 14 May 2003 (14.05.2003)	Priority date (day/month/year) 21 June 2002 (21.06.2002)
International Patent Classification (IPC) or national classification and IPC IPC(7): C25D 5/02, 17/00 and US Cl.: 204/224R, 272; 205/131, 132			
Applicant ZHANG, WENLIN ET AL			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>3</u> sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of <u>3</u> sheets.</p> <p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of report with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>			
Date of submission of the demand 08 January 2004 (08.01.2004)		Date of completion of this report 19 August 2004 (19.08.2004)	
Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230		Authorized officer Donald R. Valentine Telephone No. 571-272-1222 Jean Proctor Paralegal Specialist	

**I. Basis of the report****1. With regard to the elements of the international application:\***

- ☐ the international application as originally filed.
- ☒ the description:  
pages 1-10 \_\_\_\_\_ as originally filed  
pages NONE \_\_\_\_\_, filed with the demand  
pages NONE \_\_\_\_\_, filed with the letter of \_\_\_\_\_.
- ☒ the claims:  
pages NONE \_\_\_\_\_, as originally filed  
pages NONE \_\_\_\_\_, as amended (together with any statement) under Article 19  
pages NONE \_\_\_\_\_, filed with the demand  
pages 11-13 \_\_\_\_\_, filed with the letter of 13 July 2004
- ☒ the drawings:  
pages 1-4 \_\_\_\_\_, as originally filed  
pages NONE \_\_\_\_\_, filed with the demand  
pages NONE \_\_\_\_\_, filed with the letter of \_\_\_\_\_.
- ☐ the sequence listing part of the description:  
pages NONE \_\_\_\_\_, as originally filed  
pages NONE \_\_\_\_\_, filed with the demand  
pages NONE \_\_\_\_\_, filed with the letter of \_\_\_\_\_.

**2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.**

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

**3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:**

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

**4. ☐ The amendments have resulted in the cancellation of:**

- ☐ the description, pages NONE
- ☐ the claims, Nos. NONE
- ☐ the drawings, sheets/fig NONE

**5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\***

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. STATEMENT**

Novelty (N)

Claims 1-10 YES

Claims \_\_\_\_\_ NO

Inventive Step (IS)

Claims 1-10 YES

Claims \_\_\_\_\_ NO

Industrial Applicability (IA)

Claims 1-10 YESClaims NONE NO**2. CITATIONS AND EXPLANATIONS**

Claims 1-10 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest pipe repair apparatus which has a plating apparatus adapted for plating the interior surface of the pipe and which has a corrosion monitoring tool adapted for examining the interior surface after the plating apparatus plates a new surface on the interior surface of the pipe.

Claims 1-10 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

**NEW CITATIONS**

US 4,891,115 A (SHISHKIN et al) 02 January 1990, see Abstract and col. 7, lines 35-40; col. 9, lines 14-34; col. 11, lines 10-25.

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WE CLAIM:

1. A downhole pipe repair apparatus, comprising:

a surface treatment apparatus adapted for cleaning an interior surface of said pipe;

a plating apparatus adapted for plating a new surface on the interior surface of said pipe after said surface treatment apparatus cleans said interior surface of said pipe; and

a corrosion monitoring tool adapted for examining said interior surface of said pipe after said plating apparatus plates said new surface on said interior surface of said pipe.

2. The downhole pipe repair apparatus of claim 2, further comprising:

a sealing apparatus disposed between the corrosion monitoring tool and said surface treatment apparatus adapted for sealing off said surface treatment apparatus from said corrosion monitoring tool inside said pipe.

3. The downhole pipe repair apparatus of claim 3, further comprising:

a sealing apparatus disposed between the surface treatment apparatus and the plating apparatus adapted for sealing off said plating apparatus from said surface treatment apparatus inside said pipe.

4. A method for downhole pipe repair, said method comprising:
  - (a) cleaning an interior of said pipe;
  - (b) plating a new surface on the interior of said pipe after the cleaning step; and
  - (c) examining, by a corrosion monitoring tool, said interior of said pipe after plating said new surface on said interior of said pipe.
5. The method of claim 4, wherein the cleaning step (a) further comprises:
  - (a1) examining, by said corrosion monitoring tool, said interior of said pipe; and
  - (a2) cleaning said interior of said pipe after the examining step (a1).
6. The method of claim 4, wherein the plating step (b) comprises an electrolytic plating step.
7. The method of claim 4, wherein the plating step (b) comprises a chemical plating step.
8. The method of claim 4, wherein the cleaning step (a) comprises blasting a material against said interior of said pipe thereby generating removed corroded areas, and collecting removed corroded areas in a container.
9. The method of claim 5, wherein the examining steps (c) and (a1) each further comprise: pressing one or more fingers against said interior of said pipe, passing said fingers over said interior of said pipe, flexing said fingers when a corroded area is encountered on said interior, and generating an electrical signal in response to the flexing step representative of said corroded area..

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10. The method of claim 5, wherein the examining steps (c) and (a1) each further comprise: propagating a compressional or shear wave through one or more corroded areas on said interior of said pipe, receiving the compressional or shear waves from the interior of said pipe, and generating a record of the received compressional or shear waves representative of said corroded areas.